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# Research Proposal (Volunteer, Summer 2016)

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## Look into ZIKA Data

### background:

ZIKA virus triggers panic in public, urges and attracts scientist's broad interests in its research from 2015 since it broke out in the worldwide and caused thousands of deaths. ZIKA was believed to transmit through mosquito (*A. aegypti* and *A. albopictus*) bites, but has been discovered recently to be linked with sexual behaviors (according to WHO). According to CDC news, most people infected with Zika virus won't even know they have the disease because they won't have symptoms, and the most common symptoms of Zika are fever, rash, joint pain, or conjunctivitis (red eyes). Unfortunately, there is not any efficient medicine or vaccine for this virus till now.

### Goals:

By looking into the data of ZIKA, there are several things we can do:

1. **Data visualization** - to make a "story map" (see some at <https://storymap.knightlab.com/>), heat map or other styles of moving pictures to show the situation of the virus spreading. That could be used in the comparison between the present situation and the future one (predicted).
2. **Link with other diseases** - ZIKA is proved to be linked with Microcephaly, but with unknown causing factors. Mothers carrying ZIKA virus are very likely to deliver the virus to the next generation, and resulting in fevers, Microcephaly and other neural diseases. Additionally, there's also risk in adult clinics with neural influences (unknown) and diseases (i.e., Guillain-Barrés syndrome).
3. **Prediction of spreading** - Is the virus possible to break out in certain countries again? What are the areas? I would try to build up a dynamic model to help observe its spreading trend, and see if there're some periods of the virus by simulation.

NOTE: all the conclusions will be made based on the present data on Internet, but not the physical experiments. So they would only be provided as some observations/advices but not as strict scientific results as they're not proved in lab.

### Present references/data sources:

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[http://www.who.int/bulletin/online\\_first/zika\\_open/en/](http://www.who.int/bulletin/online_first/zika_open/en/)

<http://www.who.int/csr/research-and-development/en/>

[http://www.who.int/maternal\\_child\\_adolescent/topics/newborn/microcephaly/en/](http://www.who.int/maternal_child_adolescent/topics/newborn/microcephaly/en/)

<http://www.paho.org/zika-research/>

<http://www.cdc.gov/DataStatistics/>

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